writing further received data for the file to subsequent segments if the last segment to which the received data was written has no more available space.

Claim 3 (original) The method of claim 1, wherein each segment has a fixed byte length, wherein the index provides a segment order indicating an order in which file data is written to the segments, and wherein the index for the file is used to determine the segment including data at the requested address in the file by:

determining an offset into the file including the data at the requested address; and

determining an integer quotient value resulting from the offset into the file divided by the fixed byte length, wherein the segment including the data at the requested address is the segment at the integer quotient value in the segment order.

Claim 4 (original) The method of claim 3, further comprising:

receiving user input indicating the fixed byte length of each segment.

Claim 5 (original) The method of claim 1, further comprising:

providing a segment size that is at least greater than a byte size of a largest section within the file; and

writing each file section to one segment.

Claim 6 (canceled)

Claim 7 (currently amended) The method of claim 61, wherein as a result of releasing one or more segments, different segments for one file are capable of being stored in the primary storage and the secondary storage.

Claim 8 (currently amended) The method of claim 61, wherein accessing the determined segment including the requested address further comprises:

determining whether the determined segment is available in the primary storage; and

copying the determined segment from the secondary storage to the primary storage if the determined segment is not available in the primary storage.

Claim 9 (currently amended) The method of claim 61, wherein releasing the segment comprises:

storing a partial version of the released segment including less than all data in the segment, wherein the segment data not in the partial version is stored in the secondary storage, wherein the partial version remains on the primary storage after the segment is released.

Claim 10 (original) The method of claim 9, wherein the partial version of the determined segment is on the primary storage and wherein accessing the determined segment including the requested address further comprises:

accessing the partial version of the determined segment on the primary storage to access the data therein;

reaching the end of the partial version when accessing data therein;

staging from the secondary storage to the primary storage data from the determined segment that is not in the partial version; and

accessing the data from the determined segment staged from the secondary storage to the primary storage.

Claim 11 (original) The method of claim 9, wherein the partial version is stored only for a first segment of the segments associated with the file.

Claim 12 (currently amended) The method of claim 6̶1, further comprising:

accessing data at the end of the segment, wherein the I/O request requires further file data after accessing the end of the segment;

determining from the index a next segment including file data following the file data at the end of the segment data; and

accessing the next segment in the primary storage to access the further required file data.

Claim 13 (currently amended) The method of claim 6̶1, further comprising:

maintaining metadata for each segment that is also maintained for files in the file system; and

using the metadata for segments and files to determine when to copy segments and files to the secondary storage and when to release segments and files in the primary storage.

Claim 14 (original) The method of claim 13, wherein segments and files in the primary storage are released according to their metadata if used space in the primary storage reaches a threshold level.

Claim 15 (currently amended) The method of claim 6̶1, wherein the file data in all the segments for the file is capable of being larger than a storage capacity of the primary storage.

Claim 16 (currently amended) The method of claim 6̶1, further comprising:

reading data from one target segment on the secondary storage;

determining whether a stage attribute is specified indicating a number of segments to stage ahead; and

initiating read requests to stage the number of subsequent segments following the target segment from the secondary storage to the primary storage.

Claim 17 (original) The method of claim 16, further comprising:

receiving user input indicating the number of segments to stage ahead.

Claim 18 (original) The method of claim 1, wherein the segment does not have a file name and is not represented as a file in the file system.

Claim 19 (original) The method of claim 1, wherein the index is stored in the file, wherein no user data is stored in the file and all the user data is distributed in the segments.

Claim 20 (canceled)

Claim 21 (canceled)

Claim 22 (canceled)

Claim 23 (canceled)

Claim 24 (currently amended) A system for managing files, comprising:

a computer readable medium;

a primary storage system;

a secondary storage;

means for receiving data for a file;

means for storing the data for the file in a plurality of segments in the primary storage system storage device;

means for generating an index in the computer readable medium associated with the file indicating how the file data maps to the segments;

means for receiving an Input/Output request with respect to an address in the file;

means for using the index for the file to determine the segment including data at the requested address in the file; ~~and~~

means for accessing the determined segment including the data at the requested address~~.~~; and

means for copying at least one of the segments in the primary storage onto the secondary storage; and

means for releasing at least one of the segments copied to the secondary storage, wherein space used by the released segment in the primary storage is available for use.

Claim 25 (currently amended) The system of claim 24, wherein the means for storing the data for the file in the segments performs:

writing the received file data to one segment; and

writing further received data for the file to subsequent segments if the last segment to which the received data was written has no more available space.

Claim 26 (original) The system of claim 24, wherein each segment has a fixed byte length, wherein the index provides a segment order indicating an order in which file data is written to the segments, and wherein means for using the index for the file to determine the segment including data at the requested address in the file performs:

determining an offset into the file including the data at the requested address; and

determining an integer quotient value resulting from the offset into the file divided by the fixed byte length, wherein the segment including the data at the requested address is the segment at the integer quotient value in the segment order.

Claim 27 (original) The system of claim 26, further comprising:

means for receiving user input indicating the fixed byte length of each segment.

Claim 28 (original) The system of claim 24, further comprising:

means for providing a segment size that is at least greater than a byte size of a largest section within the file; and

means for writing each file section to one segment.

Claim 29 (canceled)

Claim 30 (currently amended) The system of claim 2924, wherein as a result of releasing one or more segments, different segments for one file are capable of being stored in the primary storage and the secondary storage.

Claim 31 (currently amended) The system of claim 2924, wherein the means for accessing the determined segment including the requested address further performs:

determining whether the determined segment is available in the primary storage; and

copying the determined segment from the secondary storage to the primary

storage if the determined segment is not available in the primary storage.

Claim 32 (currently amended) The system of claim ~~29~~24, wherein the means for

releasing the segment performs:

storing a partial version of the released segment including less than all data in

the segment, wherein the segment data not in the partial version is stored in the

secondary storage, wherein the partial version remains on the primary storage after the

segment is released.

Claim 33 (original) The system of claim 32, wherein the partial version of the

determined segment is on the primary storage and wherein the means for accessing the

determined segment including the requested address further performs:

accessing the partial version of the determined segment on the primary storage

to access the data therein;

reaching the end of the partial version when accessing data therein;

staging from the secondary storage to the primary storage data from the

determined segment that is not in the partial version; and

accessing the data from the determined segment staged from the secondary

storage to the primary storage.

Claim 34 (original) The system of claim 32, wherein the partial version is stored

only for a first segment of the segments associated with the file.

Claim 35 (currently amended) The system of claim 2924, further comprising:

means for accessing data at the end of the segment, wherein the I/O request requires further file data after accessing the end of the segment;

means for determining from the index a next segment including file data following the file data at the end of the segment data; and

means for accessing the next segment in the primary storage to access the further required file data.

Claim 36 (currently amended) The system of claim 29 24, further comprising:

means for maintaining metadata for each segment that is also maintained for files in the file system; and

means for using the metadata for segments and files to determine when to copy segments and files to the secondary storage and when to release segments and files in the primary storage.

Claim 37 (original) The system of claim 24, wherein segments and files in the primary storage are released according to their metadata if used space in the primary storage reaches a threshold level.

Claim 38 (currently amended) The system of claim 29 24, wherein the file data in all the segments for the file is capable of being larger than a storage capacity of the primary storage.

Claim 39(currently amended) The system of claim ~~29~~ 24, further comprising:

means for reading data from one target segment on the secondary storage;

means for determining whether a stage attribute is specified indicating a number of segments to stage ahead; and

means for initiating read requests to stage the number of subsequent segments following the target segment from the secondary storage to the primary storage.

Claim 40 (original) The system of claim 39, further comprising:

means for receiving user input indicating the number of segments to stage ahead.

Claim 41 (original) The system of claim 24, wherein the segment does not have a file name and is not represented as a file in the file system.

Claim 42 (original) The system of claim 24, wherein the index is stored in the file, wherein no user data is stored in the file and all the user data is distributed in the segments.

Claim 43 (cancelled)

Claim 44 (cancelled)

Claim 45 (cancelled)

Claim 46 (cancelled)

Claim 47 (currently amended) An article of manufacture <u>containing instructions</u> for managing files in a file system, ~~comprising~~ <u>the instructions being capable of causing</u> <u>a processor to</u>:

~~receiving~~ <u>receive</u> data for a file;

~~storing~~ <u>break</u> the data ~~for~~ <u>in</u> the file in<u>to</u> a plurality of segments;

~~generating~~ <u>generate</u> an index associated with the file indicating how the file data maps to the segments;

~~receiving~~ <u>receive</u> an Input/Output request with respect to ~~an~~ <u>a requested</u> address in the file;

~~using~~ <u>use</u> the index ~~for~~ <u>associated with</u> the file to determine the segment including data at the requested address in the file; ~~and~~

~~accessing~~ <u>access</u> the determined segment including the data at the requested address~~.~~<u>;</u>

<u>store the segments in a primary storage;</u>

<u>copy at least one of the segments in the primary storage onto a secondary</u> <u>storage; and</u>

<u>release at least one of the segments copied to the secondary storage, wherein</u> <u>space used by the released segment in the primary storage is available for use.</u>

Claim 48 (currently amended) The article of manufacture of claim 47, ~~wherein data is stored in the segments by:~~ wherein the processor is further operable to:

~~writing~~ write the received file data to one segment; and

~~writing~~ write further received data for the file to subsequent segments if the last segment to which the received data was written has no more available space.

Claim 49 (currently amended) The article of manufacture of claim 47, wherein each segment has a fixed byte length, wherein the index provides a segment order indicating an order in which file data is written to the segments, and wherein the index for the file is used to determine the segment including data at the requested address in the file by the processor being further operable to:

~~determining~~ determine an offset into the file including the data at the requested address; and

~~determining~~ determine an integer quotient value resulting from the offset into the file divided by the fixed byte length, wherein the segment including the data at the requested address is the segment at the integer quotient value in the segment order.

Claim 50 (currently amended) The article of manufacture of claim 49, ~~further comprising:~~ wherein the processor is further operable to:

~~receiving~~ receive user input indicating the fixed byte length of each segment.

Claim 51 (currently amended) The article of manufacture of claim 47, ~~further comprising:~~ wherein the processor is further operable to:

~~providing~~ provide a segment size that is at least greater than a byte size of a

largest section within the file; and

~~writing~~ write each file section to one segment.

Claim 52 (canceled)

Claim 53 (currently amended) The article of manufacture of claim ~~52~~ 47, wherein

as a result of releasing one or more segments, different segments for one file are

capable of being stored in the primary storage and the secondary storage.

Claim 54 (currently amended) The article of manufacture of claim ~~52~~ 47, ~~wherein~~

~~accessing the determined segment including the requested address further comprises~~

wherein the processor is further operable to:

~~determining~~ determine whether the determined segment is available in the

primary storage; and

~~copying~~ copy the determined segment from the secondary storage to the primary

storage if the determined segment is not available in the primary storage.

Claim 55 (currently amended) The article of manufacture of claim ~~52~~ 47, ~~wherein~~

~~releasing the segment comprises:~~ wherein the processor is further operable to:

~~storing~~ store a partial version of the released segment including less than all data

in the segment, wherein the segment data not in the partial version is stored in the

secondary storage, wherein the partial version remains on the primary storage after the segment is released.

Claim 56 (currently amended) The article of manufacture of claim 55, wherein the partial version of the determined segment is on the primary storage and ~~wherein accessing the determined segment including the requested address further comprises:~~ wherein the processor is further operable to:

~~accessing~~ access the partial version of the determined segment on the primary storage to access the data therein;

~~reaching~~ reach the end of the partial version when accessing data therein;

~~staging~~ stage from the secondary storage to the primary storage data from the determined segment that is not in the partial version; and

~~accessing~~ access the data from the determined segment staged from the secondary storage to the primary storage.

Claim 57 (original) The article of manufacture of claim 55, wherein the partial version is stored only for a first segment of the segments associated with the file.

Claim 58 (currently amended) The article of manufacture of claim ~~52~~ 47, ~~further comprising:~~ wherein the processor is further operable to:

~~accessing~~ access data at the end of the segment, wherein the I/O request requires further file data after accessing the end of the segment;

~~determining~~ determine from the index a next segment including file data following

the file data at the end of the segment data; and

~~accessing~~ access the next segment in the primary storage to access the further

required file data.

Claim 59 (currently amended) The article of manufacture of claim ~~52~~ 47, ~~further comprising:~~ wherein the processor is further operable to:

~~maintaining~~ maintain metadata for each segment that is also maintained for files

in the file system; and

~~using~~ use the metadata for segments and files to determine when to copy

segments and files to the secondary storage and when to release segments and files in

the primary storage.

Claim 60 (original) The article of manufacture of claim 59, wherein segments and

files in the primary storage are released according to their metadata if used space in the

primary storage reaches a threshold level.

Claim 61 (currently amended) The article of manufacture of claim ~~52~~ 47, wherein

the file data in all the segments for the file is capable of being larger than a storage

capacity of the primary storage.

Claim 62 (currently amended) The article of manufacture of claim ~~52~~ 47, ~~further comprising:~~ wherein the processor is further operable to:

~~reading~~ read data from one target segment on the secondary storage;

~~determining~~ determine whether a stage attribute is specified indicating a number

of segments to stage ahead; and

~~initiating~~ initiate read requests to stage the number of subsequent segments

following the target segment from the secondary storage to the primary storage.

Claim 63 (currently amended) The article of manufacture of claim 62, ~~further~~

~~comprising:~~ wherein the processor is further operable to:

~~receiving~~ receive user input indicating the number of segments to stage ahead.

Claim 64 (original) The article of manufacture of claim 47, wherein the segment

does not have a file name and is not represented as a file in the file system.

Claim 65 (original) The article of manufacture of claim 47, wherein the index is

stored in the file, wherein no user data is stored in the file and all the user data is

distributed in the segments.

Claim 66 (cancelled)

Claim 67 (cancelled)

Claim 68 (cancelled)

Claim 69 (cancelled)